

Title (en)
NMR IMAGING OF METABOLITES USING A MULTIPLE QUANTUM EXCITATION SEQUENCE

Publication
EP 0370333 A3 19910206 (EN)

Application
EP 89120852 A 19891110

Priority
US 27617388 A 19881125

Abstract (en)
[origin: EP0370333A2] A multiple quantum excitation pulse sequence for producing NMR signals is optimized for reconstructing images of the distribution and levels of metabolites in vivo using magnetic field gradients. Unwanted signals from water are reduced by application of composite magnetic field gradients, unwanted signals from lipids are reduced by use of a frequency selective pulse optimized to null the lipid signals, and the signal-to-noise ratio of the signals produced by lactate are enhanced by the addition of two 180 DEG excitation pulses to the sequence.

IPC 1-7
G01R 33/54

IPC 8 full level
G01R 33/44 (2006.01); **A61B 5/055** (2006.01); **G01R 33/48** (2006.01); **G01R 33/54** (2006.01); **G06T 1/00** (2006.01); **G01R 33/483** (2006.01)

CPC (source: EP US)
G01R 33/4828 (2013.01 - EP US); **G01R 33/56** (2013.01 - EP US)

Citation (search report)

- [A] EP 0186392 A2 19860702 - UNIV YALE [US]
- [A] US 4701708 A 19871020 - HARDY CHRISTOPHER J [US], et al
- [APD] US 4843321 A 19890627 - SOTAK CHRISTOPHER H [US]
- [A] MAGNETIC RESONANCE IN MEDICINE, vol. 6, no. 3, March 1988, pages 334-343, Duluth, MN, US; G.C. McKINNON et al.: "Localized double-quantum filter and correlation spectroscopy experiments"
- [A] MAGNETIC RESONANCE IN MEDICINE, vol. 7, no. 3, July 1988, pages 364-370, Duluth, MN, US; C.H. SOTAK: "A volume-localized, two-dimensional NMR method for the determination of lactate using zero-quantum coherence created in a stimulated echo pulse sequence"
- [A] MAGNETIC RESONANCE IN MEDICINE, vol. 7, no. 3, July 1988, pages 319-336, Duluth, MN, US; P.A. BOTTOMLEY et al.: "Human in Vivo phosphate metabolite imaging with 31P NMR"

Cited by
EP0412602A3; EP0496447A1; EP0460929A3; DE4023128A1; EP0404248A3; EP0597785A1; FR2698177A1; US5475308A; EP0913700A3

Designated contracting state (EPC)
CH DE FR GB LI NL

DOCDB simple family (publication)
US 5111819 A 19920512; EP 0370333 A2 19900530; EP 0370333 A3 19910206; EP 0702244 A1 19960320; JP 2553719 B2 19961113; JP H02224642 A 19900906

DOCDB simple family (application)
US 27617388 A 19881125; EP 89120852 A 19891110; EP 95118829 A 19891110; JP 29991689 A 19891120